Claims

[c1]   1.A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image comprising the steps of, converting a signal having an X position, a Y position, and an intensity component to a signal having an angle, a radius, and an intensity and filtering out all signal sets that do not have a radius greater than a predetermined radius.

[c2]   2.A method for processing a signal as in Claim 1, wherein said converting step is accomplished by use of a look-up table for rapid conversion of X and Y pixel addresses to an angle and a radius.

[c3]   3.A method for processing a signal as in Claim 2, wherein said look-up table is loaded during initialization of said system.

[c4]   4.A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 13, comprising the further step of discarding all data sets whose intensity signal does not ex-

ceed a predetermined value.

[c5]   5. A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 4, wherein said predetermined value is set during calibration to include a range of values within an expected deviation of the radius of said tube.

[c6]   6.A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 14, wherein said predetermined value is set during calibration to include only a range of values within an expected deviation of the intensity of a reflected signal.

[c7]   7.A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 4, further comprising the step of converting the analog output of an image sensor into a digital signal by synchronizing the clock of the image sensor with the intensity output to produce said X and said Y signal.

[c8]   8.A method for processing a signal that includes X, Y,

and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 4, further comprising the step of storing at least one of each angle, radius, intensity and data set in a register for one of downloading and processing.

[c9]   9.A method for processing a signal that includes X, Y, and intensity data sets for each pixel of said sensor from an image sensor receiving a substantially ring shaped image as in claim 8, wherein values within a preselected range are stored in said register.